

The Université Libre de Bruxelles (ULB) was founded on November 20th, 1834.

It is nowadays one of Belgium's leading academic institutions, with over 18,000 students enrolled (which represents the nation's second largest enrolment of French-speaking students), and one of the world's major Frenchspeaking universities. Over its 150-year history, the ULB has acquired a leading position in the world's academic community; among others, three of his alumni were awarded the Nobel Prize. The ULB is a Belgian university whose internationalist philosophy reflects its country's long standing international traditions. Indeed, this is exemplified by the students enrolled at ULB, a third of whom are from an average of 130 foreign countries. The University's teaching body is also very cosmopolitan: 20 nationalities are represented on the faculty. The ULB hosts libraries that hold more than two million books and periodicals, is provided with a local network which connects all the university laboratories to the Internet services, and allows its faculty and students to share the computational resources provided by the computing centre.

**Expertise.** IRIDIA is the artificial intelligence lab of the Université Libre de Bruxelles. It comprises approximately 35 researchers. The directors of the lab are Dr. Hugues Bersini, Full Professor of Computer Science, and Dr. Marco Dorigo, Research Director for the Belgian National Funds for Scientific Research (FNRS). The lab researchers are active in many research domains related to artificial intelligence. In particular, IRIDIA is one of the world leaders for research in swarm intelligence and swarm robotics.

**Role in ASCENS.** The main role of the IRIDIA group of ULB will be to contribute with its expertise to the swarm robotics case study. In particular, IRIDIA researchers have expertise in the design and implementation of behaviour-based controllers for swarms of embodied agents. Some of our ongoing projects are investigating the use of swarm intelligence techniques for the control of swarm of heterogeneous swarms of reactive robots. In ASCENS, we will focus on increasing the capabilities of robotic swarms by adding self-awareness to the individual robots. Self-awareness will allow swarms of robots to go beyond reactive behaviours.

In particular, we will explore planning and online learning, both capabilities that are well beyond those displayed by current swarm robotics systems. Also, we will integrate into the swarm robotics approach the formal techniques developed by the other partners of ASCENS. In this way we hope to be able to give swarm robotics researcher new tools that allow a more principled and less experimental validation of the controllers they develop. ULB will be the work package leader of WP7, and will further contribute to work packages 6 and 8.

## Key members

- [Marco Dorigo](#) - [IEEE Frank Rosenblatt Award 2015](#)
- [Mauro Birattari](#)
- [Carlo Pinciroli](#)
- [Rehan O'Grady](#)